

**Montana Department of Transportation**



**DOT HM-126F & OSHA Right to Know  
Training Manual  
1994**

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## Contents

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#### Module 1. General Awareness

1. Introduction	3
Group Activity 1	3
2. Material Safety Data Sheets	3
3. DOT Hazardous Materials Tables	5
4. Shipping Papers	7
5. Labels	8
6. Placards	9
DOT Hazardous Materials Classification	10
7. Packaging	11
8. Loading/Storage Techniques	11
Segregation	12
Test 1	14

#### Module 2. Safety

1. Introductions	17
2. Dealing with Hazardous Materials Emergencies	18
3. MDT Emergency Response	19
4. <u>Emergency Response Guidebook</u>	19
5. How to Use Emergency Response Guidebook	20
Group Activity 2	20
6. Protective Equipment	20
7. Hazardous Materials Consideration	21
8. Detecting the Presence of Hazardous Materials	22
Group Activity 3	22
Test 2	23

#### Module 3. Function Specific

1. Introduction	25
2. Maintenance	26
3. Cargo Tanks	26
4. Placards	26
5. Crack Sealers	27
6. Oil Distributor and Tar Pots	27
7. Fire Extinguisher	29
Test 3	31









# General Awareness

## 1. Introduction

HM 126F training is required under Hazardous Materials Regulations. The purpose of the training is to develop safe work practices for those who work with hazardous materials.

### Goal

Develop awareness of hazardous materials in the workplace, how to prevent accidents and incidents, and how to handle hazardous material incidents.

### Objective

Participants will demonstrate awareness of how to find hazardous material information from materials safety data sheets, labels, placards, DOT hazardous material tables, shipping papers, and packaging.

### Group Activity 1

In a small group-answer the following questions:

1. Make a list of hazard materials with which you work.
2. What haz mat accident could occur in you work area?
3. What are the emergency response steps as outlined in MDT policy?

## Hazardous Materials

Hazardous materials are defined as materials which can pose an unreasonable risk to health and safety of people or property.

## Hazardous Materials Information

There are a number of resources available to you to help you identify the hazardous materials both in the workplace and in the field. The resources include Material Safety Data Sheets, DOT Hazardous Materials Table, Labels, Placards, and Emergency Response Books.

## 2. Material Safety Data Sheets

OSHA Hazardous Communications Standards require that each employer provides their employees with information on what hazardous materials you are working with, why it's hazardous, and how to protect yourself from potential hazards.

### A. Identify And Hazardous Ingredients

There are different MSDS formats, but OSHA requires that certain information on the MSDS. This section covers the information required on the MSDS. Each MSDS needs to have-

- the name of the chemical
- name and address of company providing the chemical
- manufacture's phone number to call for advice in case of emergency

Many chemicals have more than one hazardous ingredient, and the second section of the MSDS tells you exactly what they are. It also tells you what level of exposure to each ingredient is considered safe.

#### **B. Physical and Chemical Characteristics**

This section of the MSDS data sheet covers physical and chemical characteristics of the substance. This information will help you avoid trouble. It includes normal odor, so you can avoid abnormal odor which might be dangerous. It includes characteristics such as *boiling point, melting point, vapor pressure and density, and solubility in water.*

#### **C. Fire and Explosion Data**

The MSDS provides information on how to prevent fires and explosion. This section tells the chemical's *flash point, the lowest temperature at which a chemical will ignite.* If a substance has a very low flash point, as gasoline does, you know you have to take steps to prevent fires or explosions even in freezing weather.

If there is a fire, this section of the MSDS also tells you whether to use water; CO<sub>2</sub>, or foam to put it out.

#### **D. Reactivity Data**

The next MSDS section covers reactivity, and explains what happens when a chemical mixes with a substance (such as air, water, or another chemical) that can cause a dangerous reaction. Some chemicals will burn, explode, or release toxic vapors when they react with other specific substances. This sections will tell you to keep a chemical that's highly reactive to water stored in a closed dry drums.

#### **E. Health Hazards**

This section covers how the chemicals could effect you, if you are overexposed to them. Chemicals listed as **toxic** could be poisonous to inner organs such as the kidney. **Corrosives** will burn the skin or the eyes. **Carcinogens** are chemicals suspected of causing cancer.

This section also covers the long-term effects and the short-term effects that is created by immediate exposure. The health hazards section tells how you can be exposed such as by swallowing, inhaling, contact with the skin or eyes. It also covers the symptoms of exposure. This could mean reactions such as headaches, dizziness, or a skin rash. The MSDS describes first aid procedures for exposure.

#### **F. Precaution for Safe Handling and Use**

The MSDS also gives directions for safe handling and use. It also includes how to store the chemical properly. The MSDS gives information on how to clean up spills and dispose of the waste it creates. The MSDS and a contingency plan can prevent spills from getting out of hand.

#### **G. Control Measures**

The last section of the MSDS include the *personal protective equipment* you should wear to protect yourself from chemical hazards. The MSDS will tell you to wear gloves, respirators, or protective suit, whatever you need to be safe.

This section also explains proper hygiene procedures to follow, such as washing your



hands or clothes after working with the chemical. This can help reduce your exposure and prevent health hazards.

### 3. Department of Transportation Hazardous Materials Tables

The Hazardous Materials Table lists materials that the Research and Special Programs Administration has determined: *May pose an unreasonable risk to health and safety or property when being transported.* Here are a few that are used in MDT.

Column 2 Hazardous Materials Description and Proper Shipping Names	C-3 HM Class or Div	C-4 ID no.	C-5 Pack- ing group	Column 6 Labels Required
Acetylene	2.1	UN1001		FLAMMABLE GAS
Asphalt, at or above its flashpoint	3	NA1999	III	FLAMMABLE LIQUID
Benzene	3	UN1114	II	FLAMMABLE LIQUID
Calcium Chloride	5.1	UN1453	II	OXIDIZER
Diesel	3	NA1993	III	
Hydrated Lime				
Mercury	8	UN2809	III	CORROSIVE
Oxygen	2.2	UN1072		NONFLAMMABLE GAS, OXIDIZER
Paint	8	UN3066	II	CORROSIVE
Propane	2.1	UN1978		FLAMMABLE GAS
Stoddard Solvent- Toulene	3	UN1294	III	FLAMMABLE LIQUID

The Hazardous Materials Table identifies the requirements that apply to each shipment of a hazardous material. The table will help the user identify-

- ✓ HM description and proper shipping names
- ✓ Hazard class, identification number, and packing group
- ✓ Required labels
- ✓ Special provisions

## **A. Information in the Hazardous Material Table**

Not all the columns apply to our operation. The columns that will be used in this training are 2, 3, 4, 5 and 6. An explanation for these columns is given for your information.

### **Column 1-Symbols**

- + fixes proper shipping name, hazard class and packing group without regard to whether the material meets that class, packing group or other hazard class.
- A applies to materials offered or intended for transportation by aircraft.
- D identifies proper shipping names for describing materials for domestic transportation
- W applies to materials which will be transported by vessel.

### **Column 2-Hazmat Description and Proper Shipping Names**

This column list those materials which are designated hazardous. Use column 2 to find the proper shipping name of the hazardous material to be shipped or the name that most accurately describes the material. Proper shipping names appear in Roman Type not italics.

### **Column 3-Hazard Class/Division**

Designate the hazard class or division of each proper shipping name or the word **Forbidden**. If Forbidden, the material may not be transported unless diluted, stabilized, or incorporated in a device and classed according to definitions in Hazardous Materials Regulations.

### **Column 4-Identification Numbers**

Contains the identification number assigned to each proper shipping name.

UN indicates that the material is appropriate for international and domestic transportation.

NA indicates that the material is appropriate for domestic and Canadian transport only.

### **Column 5-Packing Group**

Packing groups are assigned according to their proper shipping name and hazard class and indicate the degree of danger the materials presents.

#### **Packing Group**

- I-Great Danger**
- II-Medium Danger**
- III-Minor Danger**

### **Column 6-Labels**

Hazard warning label conforming to the hazard class (column 3) and the proper shipping name (column 2) are required unless the item is exempt from labeling.



**Column 7-Special Provisions**

Identifies special provisions for transporting.

**Column 8-Packaging Authorizations**

This column contains three types of packaging authorizations: exceptions, non-bulk packaging, and bulk packaging.

**Column 9-Quantity Limitations****Column 10-Vessel Stowage Requirements****4. Shipping Papers**

Whenever a hazardous material is transported, its description must appear on the shipping papers.

Complete instructions for shipping papers appear in the Hazardous Materials Regulations, Part 172, Subpart C: Shipping Papers.

**Shipping Paper**

Container Type	HM	Basic Description	Total Quantity	Weight
TT	RQ	Cutback Asphalt, 3, NA 1999, PG III, Flammable Liquid	300 gal.	
		Farmers Union Exchange-Phone-(406) 628-4518		

The shipping paper description must adhere to the following requirements:

A basic shipping description must include proper shipping name, hazard class or division from column 3, identification number from column 4, packing group, and total quantity.

1. If a hazardous material and non-hazardous material are described on the same shipping paper, the hazardous materials must be listed first, shown in contrasting color, identified with an X or RQ before the proper shipping name in the column marked HM.
2. Must be able to read the entry.
3. The description may not include codes or abbreviations.
4. Any additional information must follow the basic description.
5. Must contain the name of the shipper.
6. Shipping paper must show an emergency response telephone number.
7. Shipping papers must contain shipper's certification.

## 5. Labels

Hazardous materials warning labels are designed and color-coded so that the hazards can be quickly recognized. Warning labels correspond to the placards that must appear on each bulk packaging, freight container, unit load device, and transport vehicle. The labels must include both the hazard class and the division of hazard according to the Hazardous Materials Table. Unless exempt, all hazardous material packages must be labeled.

### A. Labeling of Hazardous Materials

Labels on chemical containers are your guide to safety. Labels on a chemical container alert you to the chemicals' hazards and information on how to protect yourself. Used in combination with material safety data sheets, labels give you the information and guidance you need to stay safe and healthy when working with hazardous chemicals. There are a number of different labeling systems.

### B. NFPA Labels


The National Fire Protection Association, for example, uses colors, numbers and abbreviation to deliver a safety message. When you look at NFPA label, you know what the chemical is, what its hazards are, and what hazards require the most care and caution.

In this system, the following colors mean-

- Red means fire hazard
- Yellow means reactivity hazard
- Blue is a health hazard

The system uses numbers to tell you how dangerous the hazard is. The number "1" means slightly hazardous, while the number "4" means deadly.

The white space on the label gives you specific information about special hazards.

- |   |   |
|---|---|
| ✓ OX  | -chemical which is an oxidizer that should be kept away from flammable substances |
| ✓ ACID  | -acid-corrosive   |
| ✓ COR   | -chemical which is corrosive  |
| ✓ <del>W</del>  | -chemical which should not be used with water                                     |
| ✓  | -radioactive  |

### C. Color Bar Labels

Another labeling system uses colored bars with the same code system as the NFPA. The color bar labels also give a section which tell what personal protective gear to wear when working with chemicals. Though this information is available on MSDS, it is useful to know on the spot.



#### **D. Other Labels**

Labels often use a combination of words and symbols to get their message across. They start with the name of the chemical and the manufacture's name, address, and phone number if you need specific information in case of emergency.

The most important information on the label is the hazard warning: flammable, poisonous. The label uses key words to tell you the degree of hazard:

- **Danger-chemical can cause immediate serious injury or death**
- **Warning-potentially serious injury or death**
- **Caution-potentially moderate injury**

Chemical labels must also tell people who work with the chemicals exactly what kinds of health hazards the chemical presents. Words for health hazards include-

- **Toxic-poisonous chemicals**
- **Carcinogen-chemical that could cause cancer**
- **Corrosive-chemical can burn the skin or eyes on contact, lung, and nose if inhaled**

#### **E. Other Information on Label**

Labels may also give first-aid procedures to follow when exposed to the chemical. In many cases, the degree of injury can be reduced.

Labels also provide information on storing and handling the chemical. Example: Use only in well-ventilated area.

#### **F. Using Labels**

To have chemical information right at hand-

- ✓ **Make sure that every chemical you use carries a label.**
- ✓ **Replace any label that comes off or that can't be read.**
- ✓ **When transferring a chemical into a smaller container, label the container so that everyone knows what's inside.**

#### **6. Placards**

Hazmat placards are similar to the shape, color, and design of hazmat warning labels. The purpose of placards is to alert the public to potential dangers and to guide emergency personnel response to hazmat incidents. (See placards are shown on p. VIII of Emergency Response Book. The list of DOT Hazardous Materials Classification are on the next page.

## DOT Hazardous Material Classifications

<b>Hazard Class or Division</b>	<b>Label Name</b>	<b>Placard Name</b>
1.1	Explosive 1.1	Explosives 1.1
1.2	Explosive 1.2	Explosives 1.2
1.3	Explosive 1.3	Explosives 1.3
1.4	Explosive 1.4	Explosives 1.4
1.5	Explosive 1.5	Explosives 1.5
1.6	Explosive 1.6	Explosives 1.6
2.1	Flammable Gas	Flammable Gas
2.2	Non-Flammable Gas	Nonflammable Gas
2.3	Poison Gas	Poison Gas
3	Flammable Liquids	Flammable
	Combustible liquids	Combustible
4.1	Flammable Solids	Flammable Solid
4.2	Spontaneously Combustible	Flammable Solid
4.3	Dangerous when Wet	Dangerous when Wet
5.1	Oxidizer	Oxidizer
5.2	Organic Peroxide	Organic Peroxide
6.1	Poison	Poison
6.2	Infectious substance	
7	Radioactive	Radioactive
8	Corrosive	Corrosive
9	Class 9	Class 9



## **7. Performance Oriented Packaging**

The proper packaging of hazardous materials is crucial to the safety of everyone involved in their handling and transport. Each hazmat package must be designated and manufactured so that when it is filled to its limit, closed, and under normal transportation conditions:

1. The hazardous materials will not be released from the package.
2. The impact, resistance, and strength of package will not be changed due to temperature variations.
3. Gases/vapors will not effect the packaging.

Packages for hazmat materials must be properly marked with ID and special requirements, tested and approved prior to use, and have a manufacturer's mark on each package.

## **8. Proper Loading and Securement Techniques**

Specific information on loading and storing hazardous materials is located in Hazardous Materials Regulations Part 17.

If your work involves loading and securing hazardous materials, you must be aware of the following:

A. Separation distances are established for transporting radioactive materials and are required for people and cargo compartment dividing petitions.

B. Segregation of Hazardous materials-Certain hazardous materials cannot be carried on the same load. A Segregation Table provides a reference for segregating certain hazardous materials.

**Blank space** Materials can be loaded together

**Letter X** Materials can not be loaded together

**Dot •** Explosives can not be loaded together

**Letter 0** Materials can not be loaded together unless separated by four feet and must be at least 10 centimeters off the floor.  
Segregation Table is on next page.

**Segregation Table for Hazardous Materials**

Class/Division	1.1 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 A	2.3 B	3	4.1	4.2	4.3	5.1	5.2	6.1	7	8
Explosives-1.1,1.2	•	•	•	•	•	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives-1.3	•	•	•	•	•	X		X	X	X	X	X	X	X	X	X		X
Explosives-1.4	•	•	•	•	•	0		0	0	0		0				0		0
Explosives-1.5	•	•	•	•	•	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives-1.6	•	•	•	•	•													
Flammable gas-2.1	X	X	0	X				X	0							0	0	
Non-toxic, non- flammable gases-2.2	X			X														
Poisonous Gas A-2.3	X	X	0	X	X	X				X	X	X	X	X	X			X
Poisonous Gas B-2.3	X	X	0	X	X	0				0	0	0	0	0	0			0
Flammable Liquids-3	X	X	0	X				X	0					0		X		



Class/Division	1.1 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 A	2.3 B	3	4.1	4.2	4.3	5.1	5.2	6.1	7	8
Flammable Solids-4.1	X			X				X	0							X		0
Spontaneously combustible materials-4.2	X	X	0	X				X	0							X		X
Dangerous when wet materials-4.3	X	X		X				X	0							X		0
Oxidizers-5.1	X	X		X				X	0	0						X		0
Organic peroxides-5.2	X	X		X				X	0							X		0
Poisonous liquids-6.1	X	X	0	X		0				X	X	X	X		X			X
Radioactive materials-7	X			X		0												
Corrosive liquids-8	X	X	0	X				X	0		0	X	0	0	0	X		









## General Awareness Test

Directions: Read each statement carefully and circle the response that best answers the question.

1. Containers for hazardous materials must be-
  - A. Leak-proof, marked with ID numbers, and tested to use.
  - B. Leak proof, color-coded, and marked with ID numbers.
  - C. Color-coded, and marked with ID numbers.
  - D. None of the above.
2. All emergency information regarding a hazardous material must include-
  - A. Emergency telephone number.
  - B. Be accessible to workers.
  - C. Be printed in English and available at a location away from the hazmat package.
  - D. All of the above.
3. A hazmat employee is defined as one who-
  - A. Works for the Montana Department of Transportation.
  - B. Has a direct affect on the safe transportation of hazardous materials.
  - C. Works in the loading and storage of the department.
  - D. Works in the trucking industry.
4. In the Hazardous Materials Table, the packing group is an indication of:
  - A. The size of the hazmat packaging.
  - B. The weight of the hazmat packaging.
  - C. The degree of danger the material presents.
  - D. The size and the weight of the hazmat packaging.
5. The proper entry of hazardous material on a shipping paper must show-
  - A. The emergency response phone number, the name of the shipper, the basic description of the material and the ID number.
  - B. Only the description.
  - C. Only the shipping name and ID number.
  - D. Description and emergency response phone number.
6. Placards must be placed-
  - A. One each side and each end of the hazardous material package.
  - B. On each side and each end of the transport vehicle.
  - C. On the top of the hazardous material package.
  - D. On the rear of the transport vehicle.
7. The NA in the identification number refer to
  - A. Not applicable.
  - B. The fact that the material is appropriate for domestic and Canadian transport.
  - C. The fact that the material is appropriate for international and domestic transportation.
  - D. The fact that the material can't be transported.



8. Hazmat warning labels list-
- A. The contents, weight, and destination of the hazmat package.
  - B. The description, weight and destination of the hazmat package.
  - C. The correct class and division of hazard of the hazmat package.
  - D. Warning labels are color-coded only.
9. Placards are designed
- A. To correspond to labels.
  - B. Colored coded so hazards can be quickly recognized.
  - C. With hazard class and division.
  - D. All of the above.
10. The MSDS section on reactivity describes:
- A. The chemical's reaction to other chemicals, air, or water.
  - B. The chemical's reaction to being kept in storage too long.
  - C. Your skin's reaction to the chemical.
  - D. Hazardous ingredients and permissible exposure levels.
11. You can be exposed to a chemical by:
- A. Swallowing it, inhaling it, absorbing it through the skin, or getting it in your eyes.
  - B. Reading the MSDS.
  - C. Working for a chemical company.
  - D. All of the above.
12. MSDS (Material Safety Data Sheets) should be kept:
- A. In a locked file cabinet.
  - B. In a location convenient to anyone who uses chemicals.
  - C. At the chemical manufacturer's facility.
  - D. In the MDT safety office in Helena.
13. Typical protective equipment for chemical safety includes:
- A. Raincoats and umbrellas.
  - B. Hard hats and ear plugs.
  - C. Protective gloves, safety goggles, and respirators.
  - D. Shorts, sandals, and muscle shirt.
14. A chemical with a low flash point can:
- A. Only catch fire when temperatures are very hot.
  - B. Cause skin rashes.
  - C. Catch fire at low temperatures.
  - D. Are stable around flames.
15. The time to check a chemical container label is:
- A. Before you put the container away.
  - B. While meeting legal requirements.
  - C. Before you start any job involving the chemical.
  - D. After you've been exposed to the chemical.





16. On National Fire Protection Association labels, red means fire hazard and
- A. Green means health hazard and purple means explosion hazard.
  - B. White means no hazard.
  - C. Blue means health hazard.
  - D. Yellow means flammable/combustible.
17. When numbers are used on a label to indicate the degree of hazard:
- A. 1 is slightly hazardous and 4 is deadly.
  - B. 4 is slightly hazardous and 1 is deadly.
  - C. 1 is slightly hazardous and 10 is deadly.
  - D. Number system refers to environmental issues.
18. **Danger** on a label means the chemical can cause:
- A. Headaches.
  - B. Potentially moderate injuries.
  - C. Immediate serious injury or death.
  - D. Slight burns to the skin.
19. The word **toxic** on a label means:
- A. The chemical can poison you.
  - B. The chemical can catch fire.
  - C. Don't mix the chemical with water.
  - D. The chemical will burn your skin.
20. When you transfer a chemical from a large to a small container:
- A. Do the job in a clean storage area.
  - B. Tell other workers what's in the small container.
  - C. Label the small container.
  - D. Don't worry about the chemicals.







# Safety Training

## 1. Introduction

Safety training is intended for any hazmat employee who handles or transports packages of hazardous materials and could therefore be potentially exposed to such materials in an accident/incident.

This training is a basic safety training to those with limited emergency responsibilities.

## Goal

To ensure that each hazmat worker knows what to do in the event of a hazardous materials incident/accident.

## Objectives

1. Participants will demonstrate how to use the Emergency Response Guidebook.
2. Participants will demonstrate knowledge of MDT Emergency Response.

## 2. Dealing with a Hazmat Emergency

Dealing with a hazmat emergency is crucial. At MDT, we have chances for exposure within our facilities and out on the road. This training is in no way intended to meet the requirements of hazmat employees whose primary function is emergency response. It is simply meant to provide basic safety training to those with limited emergency responsibilities.

If you are exposed to hazardous material incident/accident during the course of your work, you may need to know the following about emergency response:

A. Before you do anything about an hazardous material incident, you need to know the basic description and proper shipping name of hazardous material.

B. You need the following information about the hazardous materials involved:

- immediate hazards to health
- risks of fire and exposure
- immediate precautions needed in case of an incident/accident
- who to contact in case of an incident/accident
- how to clear the area
- preliminary first aid including how to use a fire extinguisher
- emergency response number

C. This information must be available away from the package containing the hazardous materials. You can find this information from:

- Shipping papers



- Emergency Response Guidebook
- Material Safety Data Sheet

### 3. MDT Emergency Response

The red cards indicate the guidelines for establishing procedures for first responders. The following are the procedures for hazardous materials initial emergency response.

#### MONTANA DEPARTMENT OF TRANSPORTATION PROCEDURES FOR HAZARDOUS MATERIAL SITE EVALUATION & RESPONSE INITIATION

The following guidelines have been established to protect all employees in the event of hazardous material spill incident:

1. Secure the site; control traffic.
2. Notify the nearest area office; give location.
3. Protect yourself, use a safe approach.
  - Approach from upwind, if possible.
  - Do not walk in or touch any spilled material.
  - Avoid inhaling fumes, smoke or vapors.
  - Do not assume that no noticeable smell indicates safety.
4. Identify the hazard if possible.
  - Relay information to area office.
  - Ask yourself:
    - Is rescue your immediate problem?
    - Is rescue really possible with the resources you have?
5. Request further aid and assistance from area office.
6. Enter the site only when you know enough and have the resources to do so safely.
7. Area office will:
  - Notify the L.E.P.C. (Local Emergency Planning Committee) phone \_\_\_\_\_
  - Notify S.E.R.C. (State Emergency Response Commission) State D.E.S. (Disaster Emergency Services) 444-6911.
  - Notify Chief Maintenance Engineer 444-6158.
  - Continuously update L.E.P.C./incident commander, S.E.R.C. State D.E.S. and Chief Maintenance Engineer.
8. Chief Maintenance Engineer will:
  - Notify Director.
  - Continuously update the Director.
9. On-Scene coordinator will;

- Coordinate State agency response.
- Coordinate with local incident commander.
- Assume control of hazardous material incident until relieved by local government.

It is important the you follow the Hazardous Materials Checklist, the L.E.P.C. and S.E.R.C. State D.E.S. will request this information from the area office when they are called.

#### **4. Emergency Response Guidebook**

Our workers have the potential of being exposed to hazardous materials during a hazmat incident/accident within the work place and on the road.

The Emergency Response Guide is an excellent tool for guiding actions in a haz mat emergency.

Look at page i in the guidebook. The first statement in that book is bolded and underlined.

**RESIST RUSHING IN!**  
**APPROACH INCIDENT FROM UPWIND**  
**STAY CLEAR OF ALL SPILLS, VAPORS, FUMES AND**  
**SMOKE**

#### **5. How to Use the Emergency Response Guidebook**

##### **A. The guide is divided into color-coded parts:**

**Yellow pages:** list hazardous materials by ID number

**Blue pages:** list hazardous materials alphabetically

**Orange pages:** guide numbers for emergency response information

**Green pages:** initial isolation and protective action distances

##### **B. Using the guide:**

###### **1. Identify the material**

###### **a. Find one of the following:**

- ✓ 4 digit ID number on a placard or orange panel
- ✓ 4 digit ID number (list after UN or NA) on a shipping paper or package
- ✓ name of material on a shipping paper, placard, or package



b. If you cannot locate the ID number or name:

✓ try to find a placard like it in the table of placards. Refer to the two digit guidebook

**C. If you cannot find any reference to a guide, but you believe the incident involves a hazardous material, turn to Guide 11 and use that until more information is available.**

**D. Find the material's 2 digit guide number using:**

- a. yellow ID section
- b. blue name section

Guide numbers for explosive hazardous materials are printed in the middle of the first page of the guide.

If an entry is highlighted in yellow or blue section turn to green section: **Initial Isolation and Protective Active Distances** for information.

### **Group Activity 2**

List the hazardous materials you come in contact with during your work and provide the guide number for each.

**Hazardous Material**

**Guide Number**

## **6. Protective Equipment**

For the hazardous materials above what protective equipment do you need to have when working with each of these materials?

## **7. Hazardous Materials Considerations**

When coming across an accident as a first responder and you don't see any placards, assume there might be hazardous material involved.

- A. You, as the first responder, are hampered by limited knowledge.
- B. There are no routine incidents.
- C. Chemical exposure can have lasting effects on your health.
- D. Hazardous materials are everywhere.

Example: Gasoline is common at transportation incidents. One gallon, when vaporized and

ignited, has the explosive heat of 20 sticks of dynamite.

E. Some common products are deadly when mixed.

Example: Semi hauling grocery supplies will not be placarded, but could contain lethal combinations such as ammonia and chlorine bleach.

## **8. Detecting the Presence of Hazardous Materials.**

Detecting the presence of a hazardous material is the first step in the response sequence.

### **A. Interpreting outward warning signs**

Observing any of these outward warning signs should serve as an immediate **RED FLAG** to emergency responders assessing the incident scene.

- ✓ collapsed victims
- ✓ people running from a hazardous area
- ✓ birds and insects dead around site
- ✓ hissing sound
- ✓ flames or smoke

### **B. Searching for detection clues.**

Be alert to clues that indicate the likely presence of a hazardous material.

#### **1. Container shapes.**

What type of containers/vehicles would you suspect would carry hazardous materials?

#### **2. Marking & color**

Colors refers to colored marking systems like the National Fire Protection Association's Standard 704-blue for health, red for flammability, and yellow for reactivity.

#### **3. Placards & labels**

Placards are found on front rear and side of containers and vehicle. Labels are on containers.

Color of placard indicates the major hazard class. Single digit on some placard indicates the hazardous class. UN numbers indicate a particular hazardous material. Placards also have symbols which indicates hazardous materials.



### Group Activity 3

You have come upon an accident on a two-lane highway. A semi is overturned in one lane of traffic. There is a small fire on the site. The victim from the accident is twenty-five feet from the truck. The truck has a placard marked UN2672. What does the Emergency Response Guidebook say your response is? What should you do as far as MDT Emergency Response Guidelines.





## Safety Test

You will need to use the Emergency Response Guidebook for parts of the test.

1. The primary goal of safety training is to:
  - A. Prevent you from being injured or allowing others and the environment to be injured.
  - B. Comply with state and federal law.
  - C. Identify what hazardous materials are and the risks associated with them.
  - D. Identify the potential outcomes of incidents involving hazardous materials.
2. All emergency information regarding a hazardous material must:
  - A. Contain an emergency telephone number.
  - B. Be accessible to workers.
  - C. Be printed in English and available away from the hazmat package.
  - D. All of the above.
3. When dealing with vapors, fumes, and smoke:
  - A. Stay clear only if you know the material is hazardous.
  - B. Stay clear and assume the material is hazardous.
  - C. Approach slowly after covering your mouth and nose.
  - D. Approach slowly after calling for assistance.
4. The orange pages of the Emergency Response Guidebook contain:
  - A. A listing of hazardous materials by ID number.
  - B. An alphabetical listing of hazardous materials.
  - C. Initial isolation and protective action distances.
  - D. Emergency response information.
5. If an entry is highlighted you should:
  - A. Be prepared to leave the area immediately.
  - B. Turn to the orange pages for emergency response information.
  - C. Turn to green pages: initial isolation and protective action distances.
  - D. No material is highlighted.
6. At a minimum, safety training must include:
  - A. How to isolate a spill.
  - B. Knowing whom to call in case of a hazmat emergency.
  - C. How to use the Emergency Response Guidebook.
  - D. Both B and C.
7. If you cannot find either the ID number or name of a spilled material that you believe is hazardous:
  - A. Use Guide 11 until you receive more information.
  - B. Take no action until you receive more information.
  - C. Leave the area immediately.
  - D. Select any of the guide numbers used for explosives.





8. The green pages of the Emergency Response Guide provide:
- A listing of hazardous materials by ID number.
  - An alphabetical listing of hazardous materials.
  - Initial isolation and protective action distances.
  - Emergency response information.
9. You find a material's 2-digit guide number in the Emergency Response Guidebook by:
- Using the yellow pages (ID index).
  - Using the blue pages (name index).
  - Looking on the shipping paper or MSDS
  - Either A or B.
10. N.O.S. means:
- Not an organic substance.
  - Not otherwise specified.
  - Not other wise safe.
  - No other signs.
11. The most dangerous clue that emergency responders can utilize to attempt to detect and identify hazardous materials is:
- Their senses.
  - The container markings.
  - Shipping papers.
  - Occupancy or location.
12. Which emergency action guide should the emergency responders use for the material identified in these shipping papers below?
- 12
  - 19
  - 26
  - 69

033V1	1	RQ	Ethylene Oxide		
			Flammable gas		
			UN 1040		
			Emergency contact: (800) 424-9300		

13. The initial isolation distance for a spill or leak from the container (UN 2199) if there is no fire would be how far in each direction?
- 500 feet
  - 150 feet
  - 0.2 miles
  - 0.5 miles





14. On placard feature most visible from a distance is the-
- A. Color
  - B. Symbol
  - C. Hazard class
  - D. Hazard class number
15. First responders should initially attempt to detect the presence of hazardous materials at an incident by-
- A. Calling Chemtrec.
  - B. Looking at the scene from a distance.
  - C. Driving or walking into the incident and looking for outward warning signs.
  - D. Locating the shipping papers.



# Introduction

The purpose of this document is to provide a comprehensive overview of the project's objectives, scope, and deliverables. This section will outline the key goals and the expected outcomes of the project. The project is designed to address the current challenges and opportunities in the field, and it is expected to contribute significantly to the advancement of the discipline. The following sections will detail the project's methodology, timeline, and the roles of the team members.

The project is organized into several phases, each with specific tasks and milestones. The first phase involves the initial planning and the establishment of the project's framework. This is followed by the data collection and analysis phase, where the project team will gather and process the necessary information. The final phase is the implementation and evaluation stage, where the project's results will be put into practice and their effectiveness will be assessed. The project team is committed to maintaining open communication and providing regular updates on the project's progress.

The project's success is contingent upon the active participation and collaboration of all team members. It is essential that each team member understands their role and responsibilities and adheres to the project's timeline and budget. The project team will hold regular meetings to discuss the project's progress and address any issues that may arise. The project's outcomes will be shared with the relevant stakeholders, and the project team will be responsible for ensuring that the project's results are effectively communicated and implemented.





# Function Specific Training

## 1. Introduction

Function specific training is intended to teach the skills needed for a specific haz mat job assignment.

### Objectives

Increase the awareness of safety considerations and regulatory requirements, thereby reducing the occurrence of hazardous materials incidents caused by human error.

This section is completely dependent upon the hazmat job duties you have in the department:

Lab  
Maintenance  
Distributor  
Tar Pot  
Crack Sealer  
Stock  
Mechanics

## 2. Maintenance

Most Haz Mat 126 driving requirements are taken care of through MDT CDL requirements. Procedures not directly related to driving are covered in this training session. This includes proper loading and unloading techniques, safety features on equipment, pretrip and inspection of valves.

- A. Smoking is not allowed on or near vehicles during loading or unloading of Class I (Explosives), Class 3 (flammable liquids), Class 4 (flammable solids) Class 5 (oxidizers), and Class S2-Division 2.1 (flammable gas) materials.
- B. Handbrake must be set and all reasonable precautions taken to prevent vehicle movement during loading and unloading.
- C. Protect valves and fittings from being damaged when loading and unloading.

## 3. Cargo Tanks

Cargo tanks and trucks are at special risk. As an operator you need to know-

- ✓ operation of emergency control features
- ✓ vehicle handling with regard to sloshing, surging, and stability
- ✓ loading and unloading requirements
- ✓ properties of the hazardous materials transported
- ✓ inspection requirements for cargo tanks

Function specific training and driving requirements are taken care of through the CDL cargo tank and hazardous materials endorsements. The function specific training does cover operation of specific hazardous materials' equipment.

#### 4. Placards

The following placards are to be used with the following equipment.

Used for road oil tanks, tar pots, distributors, heat-a-mix, pug mills, recyclers.



Used for propane tanks (portable and fixed.)



Used for crack sealers.



Used for distributors, heat-a-mix, tar pots, pug mills, recyclers, propane tanks, road oil tanks, crack sealers, paint stripers, or any flammable combustible storage area.

Road oil tanks (6-1200 gallons) shall be marked as you are looking at them by the most direct route in the yard. Tar pots (600 gal.) and crack sealers (200 gal.) shall be marked on two side. (opposite). Distributors (1,200-4000 gal) shall be marked on all four sides. Propane tanks shall be marked on two sides (opposite).

#### 5. Crack Sealers

Extreme care must be used when operating this equipment. Safety is the result of being careful and paying attention to details.

- ✓ Read the **Operator's Manual** before operating this equipment.
- ✓ Remember the propane flame is about 2200°. Certain exposed parts of this machine when operating, reach 500°; the sealant as high as 400°; and the hydraulic oil may reach 200°.
- ✓ Wear protective clothing and eye protection.
- ✓ Tighten and leak proof all joints and fittings.
- ✓ Replace any hose which shows any signs of wear, fraying, or splitting. Tighten all



bolts on all flanges after 100 hours.

✓ Tighten all bolts, nuts and screws every 250 hours.

## **6. Oil Distributor and Tar Pots**

The oil distributor is designed to heat and apply different types through a spray wand or bar. It is very important that you know how to run the equipment, know the operating temperatures, and the flashpoint of the material being used. This information is available on the MSDS. **DO NOT HEAT EXCEEDING THE FLASHPOINT.**

**USE EXTREME CAUTION NOT TO SPLASH HOT MATERIAL ON OPERATOR AND MACHINE. DO NOT MOVE OR TRANSPORT UNIT WHEN LID IS OPEN.**

### **Daily Checks**

- A. General appearance, tank, truck , pump, motor, hoses, etc.
- B. If engine powered unit, check oil level of engine and coolant level.
- C. If hydraulically operated, check hydraulic oil and filter. Connect hydraulic pigtails to appropriate connections on towing vehicle.
- D. Check air pressure in tires.
- E. Check lubrications.

### **Before Filling Material Tank:**

- A. Check that proper material is being used.
- B. Check that rear draw-off valve is shut.
- C. Check that no foreign material has entered the tank.
- D. Exercise caution when loading equipment with hot asphalt. Use proper safety equipment and procedures.
- E. Check for proper valve positions.

### **Before lighting burners make sure that:**

- A. Flues are covered with material. The flues are set at two levels. Before material drops below the flue level, the burner at that level must be turned off.
- B. Adjust the suction screen for the product pump at the appropriate level with the chain located on the manway cover, to prevent the product level from exposing the heating flues while heating. Lower the suction as needed and shut down the appropriate burner to pump remaining product from tank.
- C. For gas fired, make sure that a bottle of gas is connected up properly and shut off. Before connecting up, blow out LP fitting to prevent dirt from entering into system.
- D. Exhaust stack cover are opened.

- E. Burner control valves are off.
- F. Lighting torch valve is off.
- G. Pressure regulator reads 18-20 PSI.
- H. Before lighting burners, know the material being used. Know oil operating range and flash points. Do not exceed flash point or operating temperature.
- I. Pay close attention to temperature gauge. Switch burner flame off when temperature approaches operating temperature. Do not over heat.
- J. Use lighting wand to ignite.
- K. Do not use burners when moving equipment or while in the spraying mode.
- L. Before starting pump, make sure that the pumping system is set at desired selection and material within tank is at desired temperature of application.
- M. When material is at desired temperature select pumping operate to circulate within the tank. Check chart on unit to select pumping operation.
- N. Before changing from one pumping operation to another, disengage product pump each time.

#### **Shut Down System**

After operation, it is necessary to bleed of all gas in gas system. This can be done by shutting off gas at valve on the bottle. This allows all gas in the line to be completely burned avoiding gas traps. Shut off burner valves after gas pressure drops to 0 PSI.

**YOUR OPERATOR'S MANUAL AND DECALS ON EQUIPMENT ARE YOUR GUIDES FOR SAFE OPERATION.**

#### **7. Fire Extinguisher**

A. The index has charts on types of fires and type of extinguisher to use with each type of fire. MDT uses dry chemical fire extinguisher, ABC. The ingredients in dry chemical fire extinguisher are nontoxic. However, discharging large quantities may cause temporary breathing difficulties and may interfere with you ability to see what's going on.

When fighting a small fire, hold the nozzle as close to the base of the flames as you can without burning yourself. Shoot short sweeping bursts of the chemical across the flame base. Remember that a fire extinguisher is for use on fires that have just begun, not on raging inferno. If it's shooting in the air, don't even try to fight it. Clear the area so you won't be burned.

**From Safety Management-Number 374**

Practice beforehand makes panic less likely during emergency. Proper operation of fire extinguisher are important. People don't realize the enormous pressure in a fire extinguisher-



normally 125 pounds of pressure. As a result, when people use an extinguisher on a fire, they often wind up blowing the fire back on themselves and may create an even bigger blaze. An example of this was an employee who was trying to help, pulled the fire extinguisher off the wall and sprayed it directly on the fire. The fire blew back at him and ignited nearby curtains. The injuries the employee sustained and the additional fire damage might have been minimized had the employee been trained in proper extinguisher handling.

## **B. Classes of Fires**

Class A-Fires that occur in ordinary combustible materials such as rags, wood, and rubbish.

Class B-Fires that occur with flammable liquids.

Class C-Fires that occur in electrical equipment such as motors.

Class D-Fires that occur with combustible metals such as magnesium.









## Function-Specific Test

1. What does the word **flash point** mean?
  - A. The temperature that the material will ignite and burn by itself.
  - B. The boiling point of water.
  - C. The temperature of 78° F.
  - D. None of the above.
2. Information on flash point of road oil emulsions can be found:
  - A. On the tank.
  - B. In the material safety data sheet.
  - C. From the field maintenance supervisory.
  - D. Don't have to worry about flash points with emulsions.
3. The best place for information on operating equipment is
  - A. Your fellow worker.
  - B. Mechanics.
  - C. Operator's manual
  - D. Combination of the above.
4. Placards to use with tar pots and crack sealers need to include:
  - A. Hot with UN 1999
  - B. No smoke signs
  - C. UN 1978
  - D. All of the above.
5. When loading and unloading road oil:
  - A. Smoke around the tar pot.
  - B. Use blow torch to get asphalt moving.
  - C. Protect valves and fittings from being damage.
  - D. Splash the hot material around.
6. What type of fire extinguisher would you use with a flammable liquid such as gasoline, oil, grease, paint, and thinners?
  - A. Class A
  - B. Class B
  - C. Class C
  - D. Class D
7. In operating cargo tanks, you as an operator need to know-
  - A. Operation of emergency control features.
  - B. How to handle sloshing, surge, and stability.
  - C. What the properties of hazardous materials transported are.
  - D. All of above.



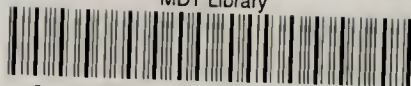


8. A pretrip inspection should be done:
- A. Whenever you have the time.
  - B. Every Monday morning.
  - C. Before every trip.
  - D. Monthly
9. Use a fire extinguisher:
- A. At the beginning of a fire.
  - B. When the fire is a shooting inferno.
  - C. When the tar pot/crack sealer is about to blow.
  - D. All of the above.
10. You can get information on the materials you use from-
- A. Shipping papers.
  - B. Emergency Response Guidebook.
  - C. Material Safety Data Sheet.
  - D. All of the above.





MDT Library



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